Summer 6-15-2016

"Class, Class, Class!" A Study of the Motivational and Engagement Effects of a Modified Whole Brain Teaching Method

Cheyenne D. Falls

"Class, Class, Class!" A Study of the Motivational and Engagement Effects of a Modified Whole Brain Teaching Method

Cheyenne Falls

University of Mary Washington

Table of Contents

Abstract

Educators are asked about their management style throughout their careers. As beginning teachers, they have to decide how they will manage their classroom in a way to inspire motivation and engagement within all of their students. The following action research looks at a modified Whole Brain Teaching (WBT) techniques in a 12th grade English classroom and questions its effects upon the students throughout the research period. WBT was created in 1999 by Crafton Hills College philosophy teacher Chris Biffle and elementary school teachers Jay Vanderfin and Chris Rekstad. From there, the model expanded into classrooms around the country (Biffle 2014, p. 7). WBT techniques are designed to keep students engaged in learning and makes classrooms easier to manage by combining auditory, verbal, and visual elements of teaching instruction. The following action research uses a phase approach to data analysis in order to compare and contrast pre and post-surveys as well as pre and post-interviews. The data is supported with field notes taken throughout the two-week period of WBT instruction. The data indicates that following the implementation of WBT students were more likely to cite extrinsic motivators for how they stay motivated in class. The most increased extrinsic motivator was teacher suggesting a correlation between Whole Brain Teaching and students being more motivated by their interactions with the teacher.

Introduction

Education is a give and take no matter what angle you are looking in at the classroom from. During peer work students must be willing to give and receive information from their peers in order to absorb the information. Teachers must be willing to take in the feedback their students are giving them in order to adjust their curriculum to enhance engagement and performance. Students, in turn, must also be willing to intrinsically motivate toward a task they

are set upon by their teacher. Successful classrooms must have motivated teachers and students who are all engaged in the work they are doing. The issue is deciding what that classroom looks like and how it is achieved. Chris Biffle, with the help of his collogues, created WBT in 1999 (Biffle 2015, p. 7). WBT techniques are designed to keep students engaged in learning and combines auditory, verbal, and visual elements of teaching instruction to make classrooms easier to manage.

In his book *Whole Brain Teaching for Challenging Kids*, Chris Biffle (2015) stresses that WBT is an example of "orderly fun" and a way of keeping students' whole brain involved in learning. He emphasizes that the longer a teacher stands at the front of the class just speaking at them and not engaging them in some way, the more students teachers lose (p. 5). Although his book is focused on engaging challenging students, his methods and rules for WBT lend themselves to enhancing motivation and engagement within any classroom. There are no peer reviewed research studies to support the validity of the teaching method, but there are multiple accounts on the Whole Brain Teaching website from teachers that claim WBT has helped them manage their classroom and make learning engaging for their students. One excited educator wrote, "Every teacher can take something from Whole Brain Teaching, even if it's just a Class-Yes [call-response technique]. It is very strange to teach with 100% student engagement - it's incredible and my kids love coming to school and actively participating" (2011, August). I felt the same way when I was first introduced to WBT, it seemed like something that even without all the parts that Biffle designed it would still be beneficial to the class to try put to the test.

A web search for Whole Brain Teaching pulls up a page of teachers, in mostly elementary age classrooms, beginning each new piece of instructing with an address such as "Class, Class, Class" and the students reply "Yes, Yes, Yes" in the same tone of voice. Biffle

posted a series of nine lessons for creating a WBT classroom. These videos define the rules of WBT one by one and also give examples of how using these rules look in a classroom. The rules include following directions quickly, raising your hand to speak, raising your hand to get out of your seat, makeing good life choices, and keeping your teacher happy. His ninth video describes creating a scoreboard as an extrinsic form of motivation to make students aware of when they have successfully followed the five class rules. The present action research seeks to answer the following research question: How does a modified Whole Brain Teaching affect student engagement and motivation in a 12th grade English classroom? Some aspects of the method of WBT seem problematic, such as the extrinsic scoreboard motivation and if 12th grade students will respond to the approach at all. For these reasons, I hypothesize that WBT will enhance engagement and extrinsic motivation at first, but will have limited effect on the longer lasting intrinsic motivation to stay engaged in the class.

Literature Review

This literature review seeks to describe strategies in which student engagement and motivation can be enhanced inside an English classroom. The review will provide the foundation for research conducted to analyze the effect of a modified Whole Brain Teaching (WBT) strategy in a 12th grade English setting. Due to the lack of research studies conducted specifically about WBT, the literature research has been broadened to include studies that look specifically at ways educators engage and motivate their students in order to enhance their classroom experience. A wealth of peer-review journal articles, qualitative studies, and books dedicated to the topic were critiqued. Although the action research to follow will look specifically at students at a 12th grade level, the literature reviewed includes students at multiple levels and in various educational environments including science and math. Literature was obtained in a variety of ways. Research

articles were found using online databases including Education Research Complete, Education Full Text, and Google Scholar.

In order to clearly define WBT, the review has been organized to introduce the theoretical background of engagement and motivation first. The second section looks specifically at motivation in the classroom and is broken down into the following subsections: enhancement, loss of motivation, retention. The following section of the review describes studies conducted to support student engagement. Not much of the literature that was reviewed looks directly at a WBT approach, but aspects of WBT are still evident in studies conducted that look at ways of enhancing whole class, small group, and individual engagement.

Whole Brain Teaching

The problem for creating motivation in the classroom is not that the students lack motivation to learn anything at all, it is simply that the students lack motivation to learn what is being taught (Abdullah, Bawaneh, Saleh, & Zain 2012). Abdullah, et al. (2012) emphasize that the difficulty comes from not only trying to create this motivation within individual students, but creating an attractive space within their classrooms which students feel motivated to learn. A WBT classroom is designed to have a list of five rules that are displayed and discussed explicitly with the class upon first introduction of Whole Brain Teaching (Biffle, 2015). The intention of these rules are to keep students from wandering about the room, speaking out of turn, and turning in unacceptable work. Although Biffle's (2014) rules of WBT may not be applicable to all school settings, the concept of having posted rules and keeping students continually engaged and invested in the class lends itself perfectly to a study question based on how WBT affects motivation and engagement.

Chris Biffle (2010) supports his WBT instructional techniques by explaining that all strategies are validated by “contemporary brain research” (2010). On his WBT website, Biffle suggests that his primary attention-getter, Class-Yes, activates the prefrontal cortex. The prefrontal cortex controls decision making, planning and focus attention. The creators of WBT think that their call-response technique is like a brain switch that readies students for instruction. The Scoreboard activates the limbic system, which is the source of our emotions. When an instructor makes a mark on the scoreboard this creates a small emotional jolt, positive or negative, for the students and activates the limbic system. In theory, by activating students’ emotions, they are more likely to pay attention to their actions in the future in hopes of receiving a positive mark on the scoreboard. Biffle cites that brain research shows that we learn by mirroring the gestures and activities of others. This research identified mirror neurons scattered throughout the brain that are activated by mimicking the behavior we observe. Biffle’s experience in the WBT classroom indicates that when a class mirrors our gestures a powerful learning bond is created between students and teachers. An action research study much like my own from Detroit, Michigan by Jesame Torres Palasigue (2009), "Integrating Whole Brain Teaching Strategies to Create a More Engaged Learning Environment," evaluated 9 types of student negative behaviors. The behaviors included head on hand or desk, complaining, staring into space, engaging in off task activities, being out of the proper seat. Palasigue measured the frequency of these behaviors with fifth graders before and after the students were introduced to Whole Brain Teaching. Palasigue reports, "Overall, there was a 50% decrease in student negative behaviors from the pre-observation to the post-observation. The frequency of the nine listed behaviors during the pre-observation markedly decreased in the post-observation." These behaviors are those that I chose to look out for during the time of my WBT implementation.

Motivation to Participate

Meyer, Schweinle, and Turner (2006) describe motivation as the students' intentions of completing a goal. Taking that into consideration, if the students' goal is to be disruptive or talk to their friend about their weekend during classroom instruction, their motivation will be just as charged to complete that goal, as an educator's would be to complete their lesson. Meyer, et al. (2006) point out the importance of *flow theory* to any motivational based study. Flow theory was developed to describe people that are engaged in a task due to intrinsic motivations (Czikszentmihalyi, 1975). Just as Biffle points out (2015), students who are motivated to disruption will continue to do so until their brain is engaged in another task that they are more invested in than their disruption.

The research is broken down to include two different types of motivation: intrinsic and extrinsic. Intrinsic motivation is defined here as the degree to which students participate in a task for reasons such as challenge, curiosity, and mastery. Extrinsic motivation represents external motivating factors such as grades, rewards, performance and competition or evaluation by others (Hsieh, 2014). In looking at these motivation factors, there are components of the WBT strategy that ask students to tap into both their intrinsic motivation factors and their external factors. The engagement components of WBT such as mirroring and call-response ask students to intrinsically stay on task. However, the scoreboard activates the limbic system and creates that emotional response from the students. The teacher, as an extrinsic motivator, is in charge of activating their motivation toward wanting to feel that positive emotional jolt.

Intrinsic motivation. The literature describes intrinsic motivation as the hardest for educators to get a firm grasp on within their students. As stated above, intrinsic factors of motivation are those that cannot be inspired through praise, social cues, or incentive. Although

some of the research found was not directed toward WBT, other techniques have been researched to measure their affects on intrinsic motivation. Self- Regulated Strategy Development (SRSD) teaches students to monitor, evaluate, and revise their own writing all while keeping themselves on task. Previous SRSD research has shown that students exert more effort of keeping themselves intrinsically motivated toward completing a task after such instruction (Graham, Harris, & Mason, 2006). Herrmann (1988) created the Herrmann Whole Brain Teaching Method, which is designed to stress implementing interactive activities in the classroom that take into consideration different ways in which students learn. Using Herrmann's method Abdullah, Bawaneh, Saleh, & Zain (2012) suggested that teachers who incorporated experimental learning in their classroom enhanced positive interactions and the students were more likely to respond positively to the lesson. The students' positivity was interpreted as an intrinsic motivation to participate. Much like Herrmann's Whole Brain Teaching and the SRSD, Biffle's (2014) classroom is centered on creating a positive and interactive environment that students feel comfortable and interested in participating in.

Research conducted by Legrain, Radel, Sarrazin, and Wild (2010) in a physical education class demonstrated that exposing students to non-controlling teacher behaviors, such as supporting students' self governing process that is free from external control, promoted intrinsic motivation for learning. Separately, when students are exposed to controlling teacher behaviors, this undermines intrinsic motivation of students and does not allow them to self-support their own behavior in the classroom. Meaning, if students feel controlled or undermined by their teachers, as if it is not the student's own idea to learn, they will rebel and refuse (Legrain, et al., 2010).

Extrinsic Motivation. Extrinsic motivations are factors contributing to motivation that are not created within the students themselves. The research seemed to focus most on achievement based and social based motivations. Hsieh's (2014) study found that students who believe that they are capable of receiving a good grade rest their motivation in the hands of achievement and are more likely to obtain a higher GPA than those students who do not believe they are capable of a high achievement. Specifically driven toward Biffle's WBT method, the point system Biffle asks teachers to implement is an example of extrinsic motivation. Research conducted by Bates (1979) found that when rewards are contingent only on participation in an activity, it generally leads to decreased interest in the activity. The scoreboard technique of Biffle's WBT could be potentially limiting to the longevity of student motivation.

Social motivations can come from students' peers or even from their teachers (Legrain, et al., 2010; Abdullah, et al., 2012). Peer motivation comes from the comfort experienced during peer interactions (Abdullah, et al., 2012). If students feel motivated to participate by the students around them, their own internal motivation will rise due to the external interactions and motivations of the class. Conversely, the internal motivation of the students' teachers may be an external motivator for students. Because intrinsically motivated teachers are more likely to adopt the previously discussed self supported governing processes, students are more likely to respond to that teacher's teaching style (Pelletier, Séguin-Lévesque, & Legault, 2002; Radel, et al., 2010).

Engagement with Teachers and Peers

Newmann (1992) describes engagement as ''the student's psychological investment in, and effort directed toward, learning, understanding, or mastering the knowledge, skills, and crafts that academic work is intended to promote" (p.12). Engagement may be described as behavioral, cognitive, emotional, and agentic (e.g., making contributions to learning activities)

(Christensen, Fulner, Kacker-Cam, Trucano, & Turner 2014; Reeve, 2013). Many studies looking specifically at engagement discuss the students' relatedness to the topic, the way it is being taught, and who is teaching it (Palinscar, et al., 1987; Newmann, 1992; Sturman, 2012; Reeve, 2013; Turner, et al., 2014; Chou, et al., 2014). The present study seeks to describe student engagement as they encounter whole class, individual, and small group interactions.

Like motivation, engagement of students is influenced by many differing factors. These factors may include instructional variance, quality of the classroom, time of day, and even if the student is hungry. Turner, Christensen, Kacker-Cam, Trucano, and Fulmer (2014) point out that "Instruction is one aspect of classroom processes that can be manipulated because it is under the control of teachers" (p. 1196). Because WBT is an instructional practice with a great deal of student led and peer interaction, the literature will all be focused on those types of settings.

Whole class engagement comes from students' individual willingness to stay engaged with what the class is doing. WBT has instructional components that ask the students to always be participating and active in the whole class instruction. Turner, Christensen, Kacker-Cam, Trucano, and Fulmer (2014) say, "teachers' instructional practices, such as their questions and feedback, affect the way tasks are implemented" (p.1197). WBT calls for teachers to be extremely aware of what is going on in their classroom. Some of the constant feedback being bounced around during WBT instruction could either limit or enhance a student's willingness to participate. Turner, et al. (2014) found those students who were staying engaged were finding classroom instruction to be compatible with the students' prior experience (p.1217). Further, they found that teachers who provided their students with a place to create meaningful relationships, the opportunity to succeed during instruction, and continuous instructional support resulted in more highly engaged students than in classrooms without this kind of scaffolding.

Group work and student-led small discussions seem to offer the highest opportunity for students to become less engaged in the instructional topic; however, some research has found this to not always be the case. Palinscar, Brown, and Martin (1987) looked at student-student led instruction and wanted to know how the students, being the same age and education level, were going to foster engagement amongst themselves. Their findings indicated that a "socially supportive context" created more willingness to participate in the instruction (Palinscar, et al. 1987, p. 249).

Chou and Lin (2014) look at how group size can affect student's ability to focus on the instructional task. They found that groups that have four or six students in them may "increase the variability of answers in a group and arouse discussion" but a group of that size also increases the tendency for students to become off topic (p. 845). Groups larger than ten were found to be less likely to stay engaged in discussion.

Group and peer interactions offer freedom to students that cannot be achieved in a direct instructional approach to running the class. Sturman (2012) argues that when students are given freedom, such as the ability to choose a group or what part of a project they will be completing, they are more likely to stay engaged in the assignment. As discussed above, this freedom also allows for instruction to be student-student based encouraging classmates to stay engaged as well.

It is beneficial to note the gaps in the research, as well. The largest of these gaps is that no significant research has been conducted about the effectiveness or ineffectiveness of WBT. However, there are no significant research studies out there to validate the method as beneficial to the students.

Methods

In order to look closely at how students' motivation and engagement are affected by a modified Whole Brain Teaching approach to classroom management and instruction, action research was conducted using a mixed methods approach with a focus on qualitative data through observations, surveys, and interviews.

Setting

The research was introduced into a Northern Virginia high school known for being the more wealthy school out of the other five high schools in the county. Only 19% of this school's students fall into free or reduced lunch programs making them economically disadvantaged in the eyes of the school system. This is much lower than any of the other schools in the county who range from 25.5% enrolled to 37.9%. The high school is the newest high school to enter the county and was built in 2004. The school's student body is 1,923 students with a majority of those (71%) being white. The minority enrollment is 29%, which is made up of Asian, American Indian, black, Hispanic, and Hawaiian students. Standardized testing found that 15% of the school's students received an advanced score on the reading proficiency test while 79% passed with proficiency. Only 6% of the student population failed the test. The U.S News and World Report has a "College Readiness" scale based on the percentage of students who took an AP test and for those who passed; this school has a college readiness percentage of 37.5%.

This study looked specifically at a 12th grade general education English classes. The class was made up of 27 students with 19 participating in the study. The timing of this class could have been a potential limitation because it is the very first class of the day starting at 7:30 a.m. and this school district participates in block scheduling meaning they stay in the class until 8:50

am. The class sometimes seemed extremely tired and even hungry, which limited their motivation to participate even before the class began.

Participants

There were five students with an IEP or 504 regulations in the first class. The main types of accommodations given in this class were as follows: information given in a variety of ways, simple and concrete language, preferential seating, extended time on quizzes and tests, provided copy of notes, being read aloud to, and individual instruction of tasks when needed. The class had 26 students, but only 19 participated in the study. The class consisted of 16 boys and 10 girls. The classroom was a mixture of unique personalities. Each student brought something dynamic to the flow of daily activities.

I picked this class over any of my other seven 12th grade classes because of their previously mentioned personalities. The room was full of individuals looking to make the best joke of the day or striving to pull the teacher's lesson so far off track that she struggles to find her way back. I was interested in ways that I could spark their attention toward the task at hand and keep them moving forward. The timing of the class also interested me; 7:30 a.m. is a tough time even for teachers to be motivated to move around. There was a lot of room for growth in motivation, so putting WBT techniques to the test with those students would yield significant results.

Data Collection

Data was collected first with a pre-survey that asked students to describe their motivation and engagement techniques, how they stay both motivated and engaged and what helps them to motivate and engage themselves. Surveys were completed on paper and then converted to a Google Forms format so I could better assess the data. There were twelve pre-survey questions

asking students about when they feel most/least motivated and when they feel most/ least engaged. In order to avoid confusion of what motivation and engagement meant, I gave basic definitions of both words prior to giving them their surveys. Questions also included whether they preferred whole class, small group, or large group settings and if they feel motivated when their teacher is motivated. The final section of the pre-survey asked students when they feel most motivated in class and why they come to school. The post-survey consisted of twelve similar questions to the pre-survey with questions about the WBT techniques used during the research period added in. The final post-survey question asked students to share any final thoughts they had about the changes to the classroom (scoreboard, mirroring, and "eyes"). Throughout the research field notes were taken to monitor students' engagement and motivation during class. This included instances where they took note of the scoreboard and times when they were and were not following the mirroring and call-response techniques.

Interviews were conducted with written notes taken in hopes of receiving more in-depth interpretations of student motivating factors, as well as when they felt engaged and unengaged. Students were selected for these interviews based on a couple of factors. First, I conducted interviews during times that did not conflict with other teachers' instruction, so I could only pull students during study hall hours. This limited my ability to be too selective with my interviewees. Second, I tried to pull a mixed group of students who participated differently within the class based on my own obbservations. I chose three students who were outspoken within the class but not always about the task at hand, and I chose two students who were quiet but did not always seem to be engaged in the lesson. Pre-interviews asked the same types of questions as the surveys; however, the interviews gave students a chance to explain when and why they are motivated and engaged in certain situations. Post-interviews asked students directly

how they felt the WBT techniques did or did not affect their engagement and motivation in our class. The students selected for the post-interviews were chosen with the same thought process as the pre-interviews. Only two of the post-interviewees were interviewed in the first round. Instruments for data collection are included in the Appendix.

Intervention

The WBT method (Biffle, 2015) calls for there to be a sort of point board somewhere within the room to remind students what the class rules are. Although the research will be used a board like this, I chose to adjust the rules to better suit the participants for the study. This made the study an adapted version of Whole Brain Teaching. The rules were as follows: 1) follow directions quickly, 2) do not speak over others, 3) make smart choices, and 4) keep it happy.

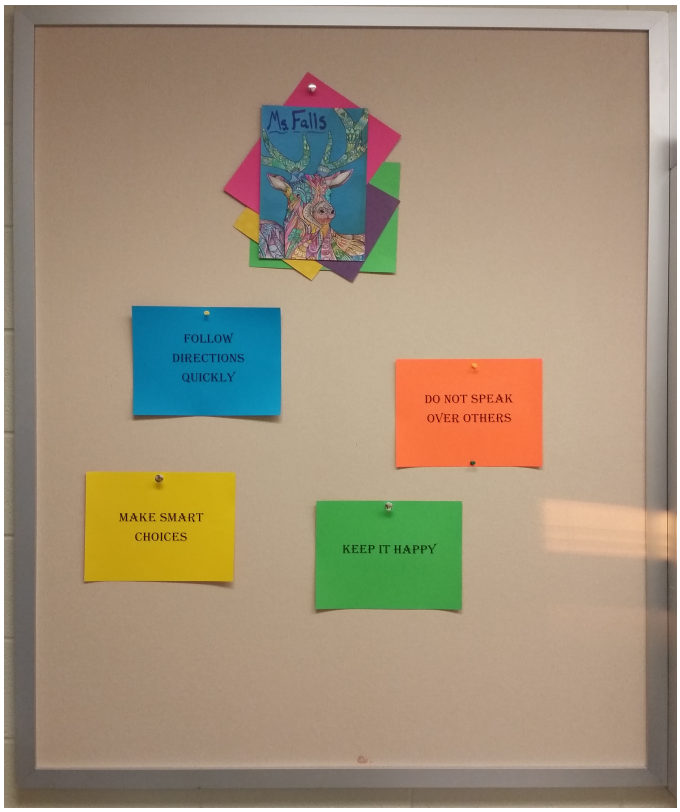

Figure 1. Scoreboard

These rules were introduced on the first day of the research. Figure 1 shows the rules and how they were displayed in the class. I explained to the participants that these rules were important for keeping the class a productive and positive environment. I explained how the board would be used to reflect how well they were doing at following these rules. In order to "keep score" of how well they were doing, unlike the Biffle (2015) way of using stickers or smiley faces to show them when they were and were not following the rules, I chose to use color paper and white

paper. When the students were following one of the rules well, such as “keep it happy” I pinned a piece of colored paper behind that rule. This worked the same way for when they were not following the rules. I made note of their behavior either by noticing the behavior and pinning the paper right then, or I made a tally of the action on the board for myself and then after instruction pinned the paper.

On the same day I introduced the scoreboard, I introduced the call- response technique I chose to use. After choosing my action research participants I quickly realized that standing in front of them and saying “class, class, class” and expecting them to answer “yes, yes, yes” was going to yield minimal results. Instead, I chose to use a call- response technique that required a non-verbal response for my students. During times when I wished to direct their attention toward something or to change gears from one class activity to the next I would simply say “eyes” and I expected them to turn from what they were doing and look at me.

Mirroring was used in a similar fashion to Biffle’s (2015) approach except for when enforcing rules. I did not ask students to mirror the action of the rules. Instead, I asked them to physically hold up their hands to list off instructions that I gave to them. This was to help reinforce paying attention to the given task list and make sure they were aware of what I expected them through repetition and physical engagement. Engagement was measured initially through the pre-survey to see when the students perceived themselves to be more engaged during classroom activities. I then measured and compared these results with class field notes.

Data Analysis

Analysis of the data was conducted in phases. Phase one looked at the survey data using both quantitative and qualitative approaches. The first parts of each set of surveys used a ten point Likert Scale going from Strongly Disagree to Strongly Agree. The free response sections

of the surveys were broken down and compared thematically. After charting and thematically coding each set of surveys, they were compared and contrasted to see what changes were made with the use of WBT. The next phase of the research categorized interviews into themes by listening for overarching outcomes and affects WBT had on the participants. Themes were created by looking for repetition of words and social science queries, which are themes that characterize the experience of informants. By using a thematic analysis approach, the research offered reliability concerns of whether the researcher was interpreting the data with as little bias as possible.

Findings

Analysis of the original survey data found that a majority of the students perceived their

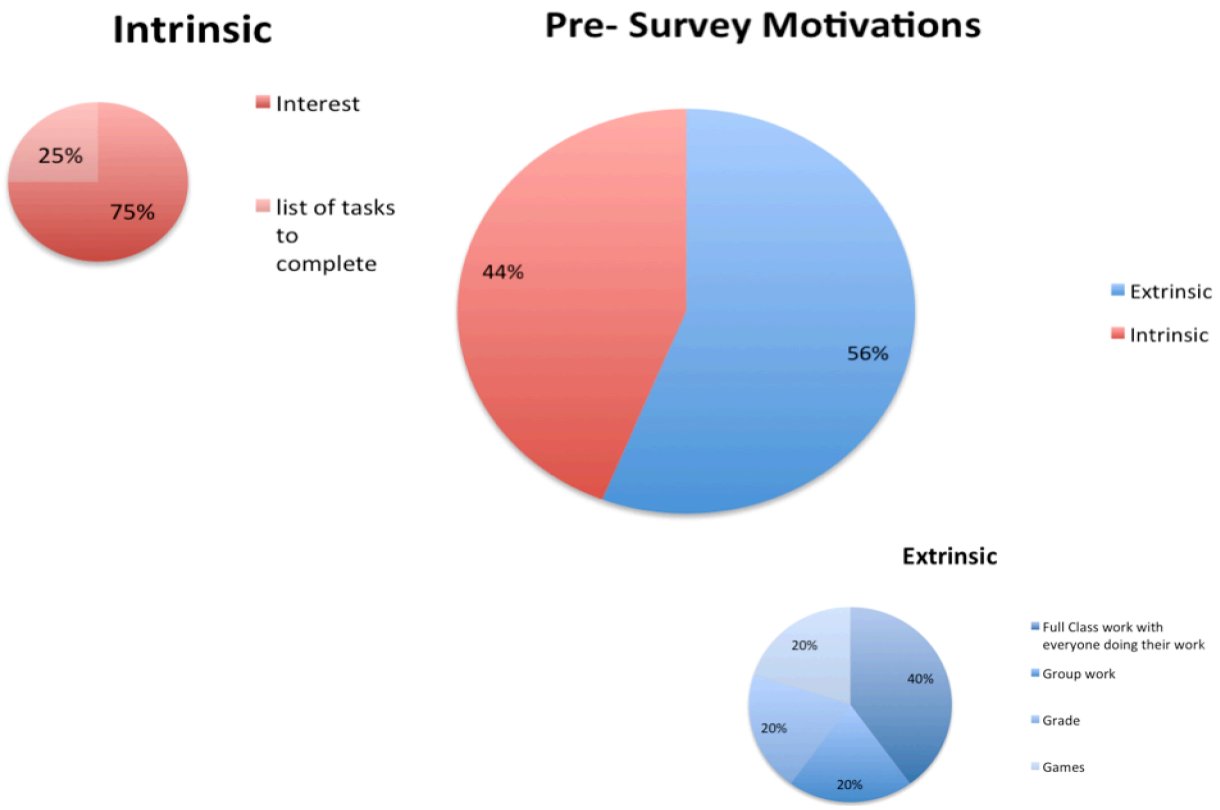

Figure 2. Pre-Survey Motivational Factors

most motivating factors to be extrinsic motivations such as working together as a full class, playing games, and working toward a high grade. Figure 2 shows that 44% of the students claimed to be intrinsically motivated by factors such as their own interest and being given a list of tasks to complete on their own time. However, after the five classes of implementing WBT, results of students' motivating factors differed from the original responses.

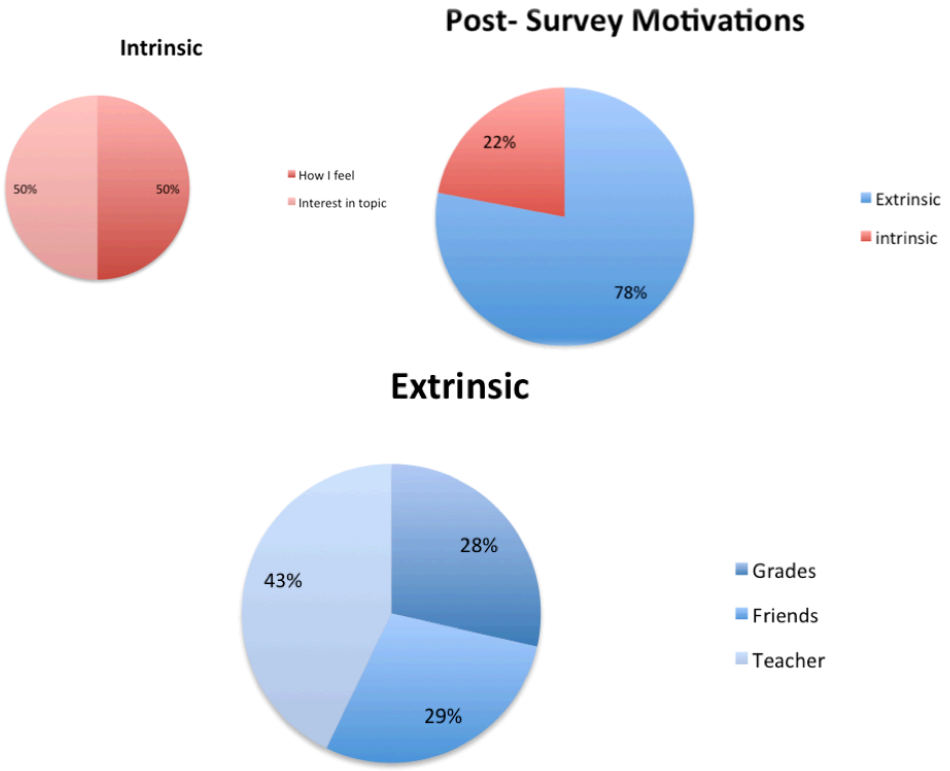

Figure 3. Post- Survey Motivational Factors

Where original responses indicated 56% of students were extrinsically motivated from different factors, post-survey data showed an increase of 22% of the participants were more motivated by extrinsic factors such as grades and friends. Most important to this action research, was that 43% of the 78% extrinsically motivated participants stated through free response questions that they were extrinsically motivated by the teacher.

Pre-interviews reflected the same results as above with 3/5 of interviewees stating that they were most motivated by extrinsic factors. One interviewee did state they were motivated in

a class by the teacher. Post-interviews saw the same kind of increase in participants citing extrinsic motivators, as did the post-surveys. Four out of five interviewees answered that they are motivated extrinsically by things such as grades and working in groups and two out of the five stated that they were motivated by the teacher. One student who was interviewed for both the pre and the post-interviews said to be motivated by grades and graduating during the pre-interview, but during the post-interview she stated that the biggest motivator is when "You guys [teachers] pay attention to us, and you don't treat us like we're robots."

Pre-Survey Likert Scale questions showed that participants felt more engaged during small group activities and field notes reaffirmed this data which will be elaborated more during discussion.

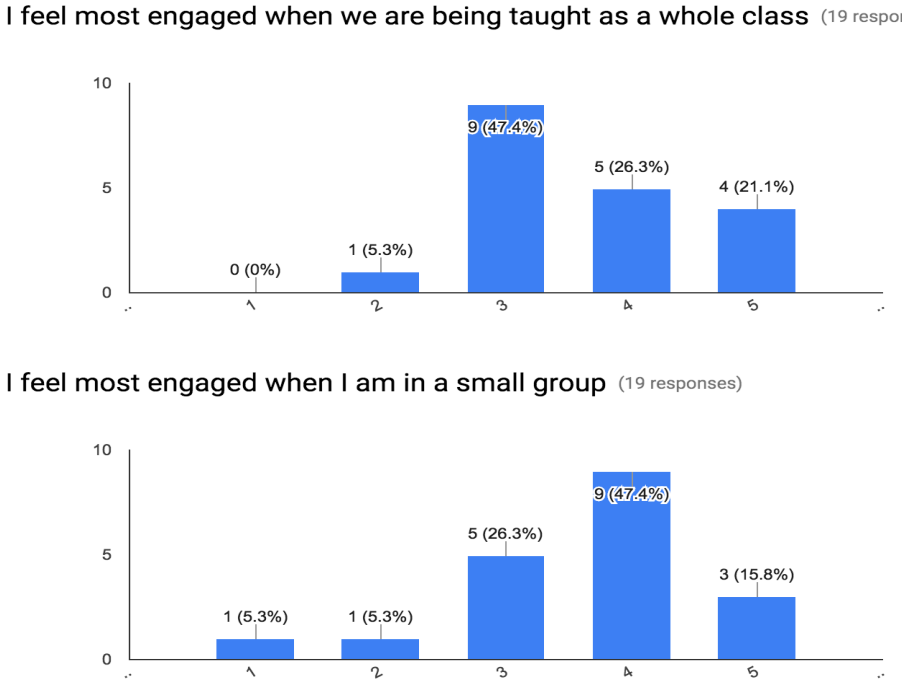

Figure 4. Large group vs. Small group Engagement

Post-surveys asked participants directly how they felt about

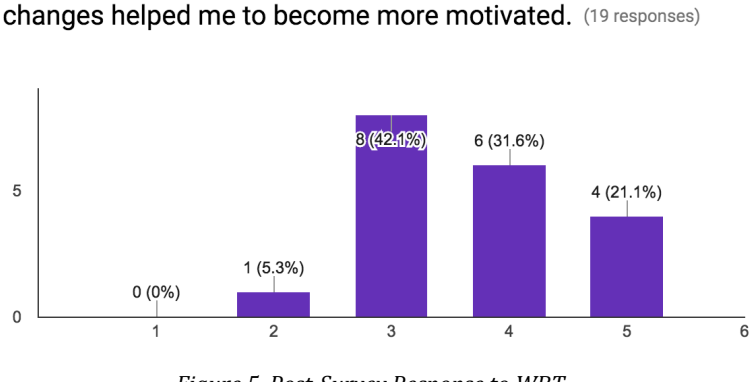

Figure 5. Post-Survey Response to WBT

the WBT changes to the classroom.

Approximately 42% of the students said they were unsure of whether the changes helped to motivate them and one student said that the changes did not help at all. However, ten of the participants agreed or strongly agreed that the WBT changes to the classroom helped to motivate them. During the post-interviews when interviewees were asked how they felt right away about the changes two of the participants said they did not notice them or they "didn't really matter." The other three said they liked the changes. One student felt like after the class was introduced to the new way the class was set up, they became more focused on a common goal. The call-response technique of "eyes" was addressed during post-interviews and all through the same two individuals felt like it didn't make a difference, and the other three out of the five felt it helped to get their classmates quiet quicker.

Figure 6. Scoreboard on final day of WBT

Looking specifically at the results of how the WBT scoreboard affected the classroom, post-interviews saw that three out of the five participants interviewed found the scoreboard to be motivation simply because they did not like to see so much white; they preferred looking at a colorful board. The other two expressed that they were indifferent to the board altogether. Through field notes I recorded that students reacted to me walking to the board during class. During some instances, I would place a piece of white paper on the board and students would call one another out for talking over each other and place blame on their classmates.

Discussion

Based on the data from the pre and post-surveys as well as the pre and post-interviews, I interpret that after integration of the modified WBT techniques students found themselves more motivated by extrinsic factors than their own intrinsic factors. This points directly to how the WBT classroom functions. The teacher of a Whole Brain Teaching classroom must be animated and must pay attention. With the implementation of this technique, the educator must pay close attention to when students are and are not following the rules. The Whole Brain teacher is continuously asking students to mirror her/his instructions as well as respond back to her/his

addresses whether it is verbally or nonverbally such as with “eyes”. These techniques place the educator at the forefront of their students’ motivation, which leads me to believe this is why the results found an increase in students citing their teacher as reasons for why they are motivated in class. WBT asks students to be engaged and respond to the teacher, the teacher must also respond to her students with the scoreboard as well as with mirroring. Mirroring is a way for teachers to physically make sure their students are engaged with the topic at hand. By asking students to hold up their hands and physically count through the tasks for the day, or by asking the students to hold up the handout they were just given while the teacher explains what they will be doing with it leads to an increase in engagement behaviors that the teacher can see right away.

The scoreboard was an extrinsic motivator that made students accountable daily for how they were behaving. The design of the modified scoreboard pointed out when they were and were not following our classroom rules without always verbally reprimanding them for those actions. Field notes found that this caused classmates to start keeping each other on track, which added to group work and whole class extrinsic motivation.

Looking closer into engagement, the data showed that students felt they were more engaged during smaller group work. During the implementation of the WBT technique I used this data to inform classroom practices to test their engagement in certain situations. Field notes found that during large group (groups of 4-5) instruction, there were more instances of white pieces of paper being placed on the board with “Do not speak over others” being the main rule that was broken. During large group discussion they were less engaged in the topic and were more likely to talk over one another and me as I tried to instruct. I also noted that as a large group it took them longer to all nonverbally respond to the call of “eyes” than it did when we were working in smaller groups.

During small group instruction (groups of 2-3) I noted no white being placed on the board for speaking over one another, but more color was added as a result of students asking another student in their group to be quiet as one of their classmates were speaking. Small group situations were also times that the class received color behind "Follow directions quickly". I noted that smaller group instruction resulted in students responding faster to mirroring techniques. This goes along with the reviewed literature on how students are more likely to be engaged during smaller group activities because of motivation coming from peers. There was less of a chance for students to become distracted during these small groups and students responded faster to me asking them to mirror the instructions I gave them.

Conclusion

Based on the provided data, I suggest that WBT and the modified approaches I took during my action research are a great way of extrinsically motivating students who may be struggling with their own intrinsic motivation or may be showing little enthusiasm for the course material. WBT also helped to spark students' engagement by having them physically mirror my instructions. By completing this action, not only was it easy for me to gauge which students were paying attention, but the technique was also helpful for getting less engaged students back on track. WBT asks for students to show a physical response to instruction which allows for the instructor to continually make informal assessments of not only how well her/ his students are doing based on their grade, but also how well they're doing in the classroom setting. These numerous daily checks help the teacher and student build a rapport that may not have been done so easily without these constant checks of engagement. I also found the WBT scoreboard to be a helpful way of motivating students to keep themselves on track. Not only did students notice and take note of when I put a white piece of paper up to tell them they had broken a rule, but the

students also noticed when I put a piece of colored paper up. This action again helps a teacher to build a rapport with her/his students. By making note when students do something well this shows the students that their teacher is actually paying attention to when they do something well and not just reprimanding them for doing something wrong. The call-response technique will be something I carry with me into my future classroom. Interviews showed that students preferred this type of attention getter rather than just being yelled at to be quiet.

As I hypothesized initially, WBT does seem to be a positive influence for extrinsically motivating students and "eyes" and mirroring were helpful techniques for keeping students engaged in a task. The constant extrinsic motivating factors cause worry for how well the students are learning to intrinsically motivate themselves. Although the WBT techniques help to keep students engaged, they may not help to teach students ways of intrinsically motivating themselves toward completing a task. More research is needed over a longer period of time to see if WBT will make a lasting impact on student's motivation or if WBT could even decrease student motivation for completing a task without having those extrinsic motivating factors.

Some of the limitations of this action research may include the timing of the class; 7:30 a.m. is early for anyone to be motivated. Further research would benefit from having more participants, perhaps multiple classes throughout the day to account for timing. Having a control group during the research period to compare data against could also enhance further research. The control group would also help determine if data reflected an increase in teacher as extrinsic motivator based simply on my persona in a classroom. Consistency of the WBT techniques could have also been a factor to limit my results. I was consistent with my use of the scoreboard throughout the data collection period; however, I would have preferred to find more instances to ask students to mirror my own actions. I also sometimes got the students' attention with calls that

did not warrant a response such as “Ok, Class” or “Alright ” and I would have liked to have been more consistent throughout the action research with how I addressed the students. Finally, my own researcher error may have been a major limiting factor. My experience in the field is limited and that showed through my creation of pre and post-interviews and surveys. Given the chance to recreate this action research I would change my approach to survey questions so that they were either all free response or all Likert scale. I would also change the questions to more closely reflect one another if not just make the pre and post-surveys completely the same with a few extra questions about WBT added on to the end of the post-surveys.

References

Bawaneh, A. A., Zain, A. M., Saleh, S., & Abdullah, A. K. (2012). Using Herrmann whole brain teaching method to enhance students' motivation towards science learning. *Journal Of Turkish Science Education*, *9*(3), 3-22.

Bates, J. A.. (1979). Extrinsic reward and intrinsic motivation: A review with implications for the classroom. *Review of Educational Research*, *49*(4), 557–576.

Biffle, C. (2015). Whole brain teaching for challenging kids.

Czkszentmihalyi, M. (1975). *Beyond boredom and anxiety*. San Francisco: Jossey-Bass.

Chou, C., & Lin, P. (2015). Promoting discussion in peer instruction: Discussion partner assignment and accountability scoring mechanisms. *British Journal Of Educational Technology*, *46*(4), 839-847. doi:10.1111/bjet.12178

Harris, K. R., Graham, S., & Mason, L. H. (2006). Improving the writing, knowledge, and motivation of struggling young writers: Effects of self-regulated strategy development with and without peer support. *American Educational Research Journal*, *43*(2), 295-340.

Hsieh, T. (2014). Motivation matters? The relationship among different types of learning motivation, engagement behaviors and learning outcomes of undergraduate students in Taiwan. *Higher Education*, *68*(3), 417-433. doi:10.1007/s10734-014-9720-6

Newmann, F., (1992). *Student engagement and achievement in American secondary schools.* New York, NY: Teachers College Press.

Palasigue, T. (2009). *Integrating Whole Brain Teaching Strategies to Create a More Engaged Learning Environment*. Retrieved from ERIC database.

Palinscar, A. S., Brown, A. L., & Martin, S. M. (1987). Peer interaction in reading comprehension instruction. *Educational Psychologist*, *22*(3/4), 231.

Pelletier, L. G., Séguin-Lévesque, C., & Legault, L. (2002). Pressure from above and pressure from below as determinants of teachers' motivation and teaching behaviors. *Journal of educational psychology*, *94*(1), 186.

Radel, R., Sarrazin, P., Legrain, P., & Wild, T. C. (2010). Social contagion of motivation between teacher and student: Analyzing underlying processes. *Journal Of Educational Psychology*, *102*(3), 577-587. doi:10.1037/a0019051

Schweinle, A., Meyer, D. K., & Turner, J. C. (2006). Striking the right balance: Students' motivation and affect in elementary mathematics. *The Journal of Educational Research*, *99*(5), 271-294.

Sturman, H. (2012). Promoting student engagement during integrative lessons: A model classroom. *CATESOL Journal*, *24*(1), 272-286.

Turner, J., Christensen, H., Trucano, M., & Fulmer, S. (2014). Enhancing students' engagement report of a 3-year intervention with middle school teachers. *American Education Research Journal*. *51*(6), 1195-1226. doi:10.3102/0002831214532515

Appendix: Procedural Documents

Student Interview Questionnaires

First round of interviews

- What motivates you to come to school?
- What is your favorite class?
- Would you say you participate a lot in your classes?
- Are there factors that motivate you to participate in class?
- What factors motivate you the least?
- When are you most engaged in class?

- When are you least engaged in class?
- Are there things teachers do to help motivate you?
- Are there things teachers do to make you more engaged?
- Do you like whole class work, small group work, or large group work?
- Is there anything else about motivation or engagement that you would like to share with me?

Second round of interviews

- What is your favorite class?
- What factors motivate you the most in class?
- What factors motivate you least in class?
- What part of our class do you feel most engaged? Why?
- How did you feel the first day walking into out WBT classroom?
- Does the scoreboard motivate you? Why or why not?
- When do you feed most engaged?
- Do you like whole class work, small group work, or large group work?
- Do you enjoy the whole brain teaching strategy?
- Do you feel engaged during class?
- Is there anything else about motivation or engagement that you would like to share with me?

Pre- Survey
Motivation and Engagement

1. I like English Class
   Really Agree Agree I'm not sure Disagree Really Disagree

2. I feel motivated to come to school because I want to get good grades.
   Really Agree Agree I'm not sure Disagree Really Disagree

3. I feel most engaged when we are being taught as a whole class
   Really Agree Agree I'm not sure Disagree Really Disagree

4. I feel most engaged when I am in a small group
   Really Agree Agree I'm not sure Disagree Really Disagree

5. I am motivated to come to school by my friends.
   Really Agree Agree I'm not sure Disagree Really Disagree

6. When I see a teacher is excited about a lesson, I get excited as well.
   Really Agree Agree I'm not sure Disagree Really Disagree

7. I feel most motivated to participate in class when we are doing interactive activities.
   Really Agree Agree I'm not sure Disagree Really Disagree

When do you feel most engaged in class?

When do you feel most motivated in class?

What increases your motivation to participate in class?

Which do you prefer?

- ○ Working alone
- ○ Working in small groups
- ○ Working in large groups

Post- survey
Motivation and Engagement

1. I like English Class
   Really Agree Agree I'm not sure Disagree Really Disagree

2. I feel motivated to come to school because I want to get good grades.
   Really Agree Agree I'm not sure Disagree Really Disagree

3. I feel most engaged when we are being taught as a whole class
Really Agree Agree I'm not sure Disagree Really Disagree

4. I feel most engaged when I am in a small group
Really Agree Agree I'm not sure Disagree Really Disagree

5. I am motivated to come to school by my friends.
Really Agree Agree I'm not sure Disagree Really Disagree

6. When I see a teacher is excited about a lesson, I get excited as well.
Really Agree Agree I'm not sure Disagree Really Disagree

7. I feel most motivated to participate in class when we are doing interactive activities.
Really Agree Agree I'm not sure Disagree Really Disagree

8. I like the changes made to our classroom.
Really Agree Agree I'm not sure Disagree Really Disagree

9. The changes helped me to become more motivated.
Really Agree Agree I'm not sure Disagree Really Disagree

10. The changes made me more engaged during class.
Really Agree Agree I'm not sure Disagree Really Disagree

11. The rule board was helpful for motivating me.
Really Agree Agree I'm not sure Disagree Really Disagree

Share any thoughts you had about the changes to the classroom. Did you like it? Why or why not?